

L24 ANSWER 1 OF 3 CAPLUS COPYRIGHT 2005 ACS on STN  
 AN 1987:639826 CAPLUS  
 DN 107:239826  
 ED Entered STN: 25 Dec 1987  
 TI Electrode-electrolyte matrix composites for fuel cells  
 IN Mitsunaga, Tatsuo  
 PA Mitsubishi Electric Corp., Japan  
 SO Jpn. Kokai Tokkyo Koho, 9 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 IC ICM H01M008-02  
 ICS H01M004-86; H01M004-88  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 FAN CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 62226583	A2	19871005	JP 1986-67194	19860327 <--
	B4	19931026		
PRAI JP 1986-67194		19860327		

**CLASS**  
 PATENT NO. CLASS PATENT FAMILY CLASSIFICATION CODES

JP 62226583	ICM	H01M008-02
	ICS	H01M004-86; H01M004-88

AB A substrate for an electrode is covered sequentially with  $\geq 2$  catalyst layers containing hydrophobic and pore-forming agents and  $\geq 1$  layer of matrix powder-binder mixture to form an electrode-electrolyte matrix composite. The amts. of the hydrophobic and pore-forming agents in the catalyst layers decrease from and the amount of binder in matrix layers (when  $\geq 2$  layers are used) increases from the substrate side. Thus, a porous substrate (H<sub>3</sub>PO<sub>4</sub>-resistant carbon sheet) was coated with PTFE; dried; coated successively with catalyst layers having weight ratios of catalyst:hydrophobic agent (PTFE):pore-forming agent (NH<sub>4</sub> carbonate) of 100:(150-400):(20-80), 100:(30-200):(10-50), and 100:(1-40):(1-20) with drying at 80-100° after each coating; coated with successive matrix layers having weight ratios of SiC (average size 0.6-1μ):PTFE (average size 1μ) of 100:(0.1-2) and 100:(1- 5) with drying at 80-100° after each coating; preheated at 150-280 (preferably 200-250°); and heat treated at 310-370 (preferably 330-360°) to obtain an electrode-matrix composite. H<sub>3</sub>PO<sub>4</sub> fuel cells using these composites had high output voltage which decreased slowly with time.  
 ST phosphoric acid fuel cell; fuel cell electrode matrix composite  
 IT Electrodes  
 (fuel-cell, matrix composites of electrolyte-, phosphoric-acid)

L24 ANSWER 2 OF 3 WPIX COPYRIGHT 2005 THE THOMSON CORP on STN  
 AN 1987-317879 [45] WPIX  
 TI Electrode-matrix coupling member for fuel cell - has porous electrode member, catalyst layer, and matrix layer comprising matrix powders and adhesive NoAbstract Dwg 0/5.  
 DC L03 X16  
 PA (MITQ) MITSUBISHI DENKI KK; (MITQ) MITSUBISHI ELECTRIC CORP  
 CYC 1  
 PI JP 62226583 A 19871005 (198745)\* 4 <--  
 JP 05077151 B 19931026 (199346) 10 H01M008-02  
 ADT JP 62226583 A JP 1986-67194 19860327; JP 05077151 B JP 1986-67194 19860327  
 FDT JP 05077151 B Based on JP 62226583  
 PRAI JP 1986-67194 19860327  
 IC H01M004-86; H01M008-02

ICM H01M008-02  
ICS H01M004-86; H01M004-88  
FS CPI EPI  
FA AB  
MC CPI: L03-E04B  
EPI: X16-E06

L24 ANSWER 3 OF 3 JAPIO (C) 2005 JPO on STN  
AN 1987-226583 JAPIO  
TI ELECTRODE-MATRIX COMBINED BODY OF FUEL CELL AND ITS MANUFACTURE  
IN MITSUNAGA TATSUO  
PA MITSUBISHI ELECTRIC CORP  
PI JP 62226583 A 19871005 Showa  
AI JP 1986-67194 (JP61067194 Showa) 19860327  
PRAI JP 1986-67194 19860327  
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1987  
IC ICM H01M008-02  
ICS H01M004-86; H01M004-88  
AB PURPOSE: To increase a balance of wettability such as water repellent ability and hydrophobic nature to electrolyte within a catalyst layer by arranging two or more catalyst layers in which the amount of water repellent agent and pore forming agent are decreased in order, and a matrix layer comprising matrix material powder and a binder, or two or more matrix layers in which the amount of the binder is increased in order formed on the surface of the catalyst layer.  
CONSTITUTION: An electrode-matrix combined body consists of two or more catalyst layers, comprising catalyst powder, water repellent agent, and pore forming agent, in which the amount of the water repellent agent and the pore forming agents are decreased in order formed on the surface of an electrode substrate 10, and matrix layer comprising matrix material powder and a binder, or two or more matrix layers 12 in which the amount of the binder is increased in order formed on the surface of the catalyst layer 11. Since multilayers of the catalyst layer and the matrix layer are formed on the surface of the electrode substrate, a balance of wettability such as water repellent ability and hydrophilic nature to electrolyte such as phosphoric acid within the catalyst layer is increased, and the matrix layer having good permeability of electrolyte and good bonding ability to the catalyst layer can be formed.  
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